



DECUS

PROGRAM LIBRARY

DECUS NO.	8-509
TITLE	INTERRUPT TEST
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SOURCE LANGUAGE	PAL III, PAL-8

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INTERRUPT TEST

DECUS Program Library Write-up

DECUS NO. 8-509

1. ABSTRACT

THIS INTERRUPT-TEST was developed to detect spurious interrupts in the system. It also is used fruitfully to detect whether a program clears all flags of the devices it uses, prior to exit to the monitor. The program tries to identify the interrupt according to a list of SKIP-IOT's, and then clears it with the proper clear-instruction. It types appropriate messages. As the program saves and restores the page zero locations it uses, it can be used with most maindecs without reloading them.

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2. LIMITATIONS

The program is designed to run in Field 0 only. Not all possible devices have been incorporated in the list. The list may, however, be shortened or expanded.

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3. REQUIREMENT

3.1 Equipment

PDP8 computer with a maximum of about 40 (decimal) interrupting devices.

3.2 Storage

The program uses memory from 7000-7577 ; starting address is 7000.

4.1 LOADING PROCEDURE and OPERATING PROCEDURE

The program should be started at 7000. It can be stopped by pressing the "H" key which results in a HALT, after which "CONTINUE" may be pressed to proceed. Typing CTRL/C will cause a jump to the monitor. The program can be restarted with the . START command of PS8. To leave the interrupting flags unaltered (cleared by the start key), the following procedure may be followed (PDP8/I) :

- 1) 6777 IN S.R.LOAD ADDRESS
- 2) PRESS EXAMINE KEY
- 3) PRESS CONTINUE KEY .

If no interrupt occurs, the accumulator shows a rotating pattern with the interrupt on Pressing a key causes the message

KEYBOARD SKIPPED.

5. ERROR MESSAGES

5.1 DEVICE // 0005 INTERRUPTED

Means that the program detected an interrupt and was able to identify it as device 5, that means the device which was cleared by a 605X instruction.

5.2 KEYBOARD SKIPPED

The keyboard takes a special place in the program, and is therefore not included in the LIST. It also has a different message.

5.2.1 KEYBOARD SKIPPED HALT

is the message after pressing the H key.

5.2.2 KEYBOARD SKIPPED +C

will be typed after pressing the CTRL/C key.

5.3 CAN'T CLEAR FLAG means that the program identified the interrupting device, but cannot clear the flag. This may be caused by three possible reasons :

- 1) The hardware cannot clear the flag.
- 2) The clear-instruction is not correct.
- 3) The flag was set between the moment it was cleared and the moment it was tested whether it was cleared.

5.4 CAN'T FIND INT.DEVICE will be messaged if the interrupt cannot be identified. This may be caused by three possible reasons:

- 1) The hardware cannot skip.
- 2) The interrupt was a spurious spike, and disappeared.
- 3) The skip instruction is wrong, or was not included in the LIST.

6. PROGRAM DESCRIPTION

After being started, the program saves page 0 locations if this was not done before (governed by the software switch STORFL). It then displays a rotating accumulator pattern, and waits for an interrupt to occur.

After an interrupt occurred , the program enters the interrupt service which takes nearly all of the program. It tests the keyboard first, and takes the necessary action for the CTRL/C key and the H key (HALT). In both cases the contents of page 0 will be restored, to insure a restart possibility of programs that share the same page zero locations.

If the keyboard did not cause the interrupt, the LIST with SKIP- and CLEAR-instructions will be dispatched. A skip instruction will be executed and if it responded to a FLAG, the message DEVICE ~~++~~ OOOX INTERRUPTED will occur. The program then executes the CLEAR instruction and tries to test whether it really cleared the flag. It therefore uses the software switch TRYSW, and reenters the LIST-"Search" at the successful SKIP-instruction. If the skip still works, it types : CAN'T CLEAR FLAG, and takes the INTERRUPT RETURN. If the flag showed to be cleared it will take the INTERRUPT RETURN without message.

A difficulty arises because of the fact that not all devices cause a SKIP when the interrupting FLAG is HIGH, but some, on the contrary, skip when it is LOW. This will be referred to as "reverse skip", indicated by the omission of bit 0 in the skip-instruction (not the clear-instr!.). The program then takes appropriate action.

7. STORAGE ALLOCATION OF SOME MAINDECS

When using the INTERRUPT-TEST together with existing MAINDECS, it is useful to know whether the two interfere. Although loading of the INTERRUPT-TEST will not destroy the MAINDECS, listed below, the INTERRUPT-TEST may be destroyed by aMAINDEC , writing into one of its buffers.

7.1 Mutually non-destructive

	<u>PROGRAM</u>	<u>BUFFRS</u>
TC01 EXT.MEM.EXERCISER	0-1377	
DISK DATA	0-5000;	5000 - 5777
KT8 TEST	0-1000	
AD08 TEST	0-2000	
KV8 TEST	0-4515	
HIGH SPEED READER/PUNCH TEST	0-3557	

7.2 INTERRUPT-TEST destroyed by MAINDEC

DM01	EXERCISER	0-3177;	3200 - 7577
TC01	RANDOM EXERCISER	0-5000;	6000 - 6200;
		;	6774 - 7576
TC01	BASIC EXERCISER	0-6377;	6774 - 7576

The author(s) will be grateful when detected errors in both software performance and the manual are reported back.

In such a case, please write to the author(s):

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